CITY OF SCOTTSDALE

Abbreviated Water and Sewer Needs

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

10535 E SHAW BUTTE is a proposed single-family development located in south Scottsdale encompassing a total of 2.1-acres. At completion the site will consist of 2 single family home sites under the R1-43 zoning category.

1.2 PURPOSE/SCOPE

The purpose of this study is to determine the onsite sanitary sewer facilities required to service the South Scottsdale development. Peak flows generated from the development will be calculated and the sanitary sewer line sizes required to drain the flow will also be calculated.

1.3 PROJECT LOCATION

The proposed 2-lot subdivision is located within the City of Scottsdale and is located on the west side of the 106th Street alignment just south of Cactus Road. Legally, the site lies in a portion of the S.W. ¼ of the S.W. ¼ of Section 21, T. 32 N., R. 5 E., G. & S. R. B. & M., Maricopa County, Arizona.

Figure 1.1 – Site Location

2.0 WASTEWATER FLOW CALCULATIONS

2.1 Wastewater Routing

The sewer lines internal to the site will be 8-inch. The property will connect to an existing sewer main in 106th Street just south of Laurel Lane. The sewer line extension will run north within 106th Street to Paradise Lane. The sewer line extension will then run west within Paradise Lane to the western edge of the property. The sewer line extension will run at a slope of 0.0052ft/ft.

2.2 Wastewater Flow Calculations

The design criteria for the sewer line sizing were also extracted from the City of Scottsdale DS&PM Chapter 7. The design criteria used for calculating the peak wastewater flows is as follows:

- Population Per Housedhold = 3.2 Persons/Home
- Average Daily Flow per Unit = 100 Gallons per Day per Unit
- Peaking Factor = 4

Based on the above design criteria, Table 2.1 below provides the calculation for the peak daily wastewater flow generated from the site.

No. of Lots	Avg. Daily Flow (gpd)	Peaking Factor	Peak Day Flow (gpd)
2	640	4	2,560

Table 2.1 – Wastewater Flow Calculations

2.2 Sewer Line Sizing

The design criteria for the sewer line sizing were also extracted from the City of Scottsdale Design Manual. Manning's Formula is used to calculate the sewer line size required for the development. The design criteria is as follows:

- Mean Full Flow Velocity of Line = 2.5 ft/sec
- Maximum Velocity of Line = 10 ft/sec
- Manning's n Value = 0.013

Based on the above criteria and using Manning's formula, the required sewer line sizes based on the flow calculated in Table 2.1 are provided in Table 2.2 below.

Line Size (in)	Slope (ft/ft)	Capacity (gpd)	ADF (gpd)	PF	PDF (gpd)	% Capacity (PDF/Capacity @ 75%)	% Capacity (d/D)	Full Flow Velocity (ft/s)	Actual Velocity (ft/s)
8	0.0052	513,786.2	640	4	2,560	0.5%	4.78	2.83	0.63

Table 2.2 – Sewerline Size Calculations

Based on Table 2.2, the sewer line size provided for the site has sufficient capacity to remove the wastewater flows generated on site.

3.0 REFERENCES

City of Scottsdale, Design Standards & Policies Manual – Chapter 7, 2018.

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WASTEWATER STUDY
FOR
10535 E SHAW BUTTE

FINAL Basis of Design Report

☑ **APPROVED**

☐ **APPROVED AS NOTED**

☐ **REVISE AND RESUBMIT**

CITY OF SCOTTSDALE

SCOTTSDALE WATER

9379 E San Salvador Dr.
Scottsdale, AZ 85258

Disclaimer: If approved; the approval is granted under the condition that the final construction documents submitted for city review will match the information herein. Any subsequent changes in the water or sewer design that materially impact design criteria or standards will require re-analysis, re-submittal, and approval of a revised basis of design report prior to the plan review submission.; this approval is not a guarantee of construction document acceptance.
For questions or clarifications contact the Water Resources Planning and Engineering Department at 480-312-5685.

BY rsacks **DATE** 3/25/2020

March 17, 2020

Prepared by:
CLOUSE ENGINEERING, INC.
JOB NO. 190908

City of Scottsdale Case No. 11-PP-2019

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